

## REMARKS

Upon entry of the above amendment, the claims will be 11-18 and 29-35.

Claims 11-18 are withdrawn and therefore, only claims 29-35 are under active prosecution in this application.

It should be noted that new claim 29 replaces previous claim 19 and more clearly points out the relationship of the claimed elements.

Further, new claims 30-33 depend on new claim 29, and correspond to previous claims 20-23, respectively.

New claims 34 and 35 also depend on new claim 29 and correspond to previous claims 27 and 28, respectively.

Applicants acknowledge the indication that previous claim 22, which corresponds to present claim 32, would be allowable if rewritten in independent form.

In the parent application, claims 19-21, 23, 27 and 28 stood rejected under 35 U.S.C. 103(a) as being unpatentable over Hego et al. and Nezu et al.

This rejection is respectfully traversed.

In a purification system for an easily polymerizable compound operating in conjunction with a vacuum section, it is impossible to completely prevent the gas containing the easily polymerizable compound from flowing into the vacuum section from the purification section. If the easily polymerizable compound, which flows into the vacuum section, polymerizes in the vacuum section, the resultant polymer clogs a condenser, a liquid ejector, or a nash pump. As a result, the vacuum section is frequently forced to stop (page 4, lines 2 to 4 of the present specification). In view of the above problems, the present invention focuses on inhibiting the polymerization of the easily polymerizable compound in the vacuum section.

Hego et al. relates to a process for purifying acrolein present in a feed gas stream including acrolein, and merely discloses that "A compound that inhibits the polymerization of acrolein and of acrylic acid may be added to the recycled liquid stream." (column 3, lines 38 to 40).

In more detail, what Hego et al. discloses is a purification system for acrolein. The apparatus shown in Hego et al. (Fig. 1) is intended for the purification of a gaseous mixture

originating from a unit 30 for the gas-phase oxidation of propylene (column 5, lines 43 to 45).

Although the polymerization inhibitor is added in the recycled liquid stream, the section where the polymerization would be inhibited is a cooling column 1 in the purification section. Thus, the present invention is unobviously different from Hego et al. who merely inhibits the polymerization in the purification section.

Moreover, it should be noted that Nezu et al. does not disclose a vacuum section as described in the present invention, but just a vacuum pump 31 (Fig 1).

Further, there is no motivation to combine Hego et al. and Nezu et al., since it is not apparent how the vacuum pump disclosed in Nezu et al. should be applied to the purifying system in Hego et al., for example, where the vacuum pump should be placed.

Secondly, Hego et al. discloses that the cooling column 1 operates at an elevated pressure ranging from  $10^5$  to  $3 \times 10^5$  Pa (column 3, lines 28 to 29). Therefore, there is no motivation to apply the vacuum pump disclosed in Nezu et al. for the purification system disclosed in Hego et al.

Further, Hego et al. merely discloses that the polymerization is inhibited in the purification system, as described above. Thus, even if Nezu et al. is combined with Hego et al., the present invention, which focuses on inhibiting the polymerization in the vacuum section, is not suggested.

In order to further distinguish the present invention from Hego, claim 29 is presented wherein:

- a) The purification system comprises a purifying section and a vacuum section.
- b) The purifying section includes a distillation column and a condenser.
- c) The vacuum section comprises a gas and liquid contact chamber and a steam ejector.
- d) The gas containing the easily polymerizable compound which is not condensed by the condenser is permitted to flow into the gas and liquid contact chamber through the steam ejector in the vacuum section from the purifying section.
- e) The liquid containing the polymerization inhibitor is supplied into the gas and liquid contact chamber in the vacuum section.

As is apparent from the above configuration, the purification section comprising merely the cooling column 1 and condenser 3 in Hego is unsuggestive of the claimed vacuum section comprising the gas and liquid contact chamber and the steam ejector.

In view of the above discussion, it is clear that Hego (Figure 1) merely discloses that the polymerization would be inhibited in a cooling column 1 in the **purification section**. Thus, Hego and Nezu neither disclose nor suggest that an exhaust gas containing the easily polymerizable compound, which is not condensed through the condenser, is permitted to flow into a gas and liquid contact chamber through a steam ejector in the vacuum section, and that the polymerization in the vacuum section is inhibited by supplying a liquid containing a polymerization inhibitor to the gas and liquid contact chamber.

The Advisory Action states

“Since the condenser of Hego serves as part of the purifying section (as claimed), the condenser is deemed to be operating at the reduced pressure. See, e.g. column 4, lines 22-33 of Hego. Nonetheless, operating in a vacuum in the processing of easily polymerizable material is not unobvious, as suggested by the Nezu’s reference.”

In reply, there is no description relating to the pressure of the process in column 4, lines 22-33 of Hego. Thus, the above assessment of the condenser operating at reduced pressure has no basis, absent an improper hindsight reconstruction of the present invention from Applicants’ own disclosure

In view of the foregoing comments and amendments, it is apparent that the rejection on Hego et al. and Nezu et al. is untenable and should be withdrawn.


As for the rejection of claims 24 and 25 over Popov or JP ‘030, no counterparts to these claims are presently recited.

No further issues remaining, allowance of this application is respectfully requested.

If the Examiner has any comments or proposals for expediting prosecution, please contact undersigned at the telephone number below.

Respectfully submitted,

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